

CAMELID VENIPUNCTURE



BASICS

OVERVIEW

- Venipuncture in llamas and alpacas can be an intimidating procedure to those unfamiliar with camelid behavior and anatomy. The jugular vein and carotid artery are in close proximity to each other and camelids generally lack a visible jugular groove that other large animal species possess. In addition, the esophagus is in close apposition to the jugular vein in the left neck, and megaesophagus in camelid species has been suggested to result from repeated needle sticks or irritation from indwelling intravenous catheters in the left jugular vein. It is important to understand camelid anatomy to reduce the risk of accidental carotid injection and other complications associated with this procedure.
- When performing venipuncture it is imperative that the patient is well restrained either within a camelid restraint chute or by a competent handler. If no assistance or adequate facilities are available, an option exists for venipuncture in alpacas in which the veterinarian is also the restrainer, and this is outlined below as the Buckeye Blood Draw technique. The less the patient moves during introduction of the needle, the less risk there is of complication.
- When possible, blood should be drawn, intravenous injections should be administered, and intravenous catheters should be placed in the right jugular vein. The left jugular vein and the esophagus are in apposition and esophagitis resulting from accidental needle sticks or secondary to phlebitis associated with an indwelling IV catheter has been reported to result in the development of irreversible megaesophagus. Additionally, if the left carotid artery is inadvertently entered with a needle, and a hematoma develops as a consequence, extraluminal obstruction of the esophagus can occur resulting in bloat.
- Important palpable landmarks for venipuncture of the camelid include the ventral vertebral processes on the right neck and the trachea. These structures can be palpated even in heavily conditioned animals. Often, unless the animal is emaciated or young, jugular filling is not observed because of the lack of a jugular groove and because of the thickness of the skin overlying the jugular vein. In addition, heavy fleece and reluctance from owners to clip the neck prior to injection contribute to the inability to visualize a jugular rise when the vein is occluded. If fleece needs to be removed from the neck, owners should always be consulted first. The jugular vein courses halfway between the ventral vertebral process and the trachea. If the thumb of the right hand is placed on the vertebral process and the middle finger placed on the trachea, the pointer finger placed equidistant from those two points will identify the location of the jugular vein. The vein should be entered either in the cranial 1/3 of the neck

where the jugular vein and carotid artery are somewhat separated or in the distal 1/3 of the neck where the vein has a larger diameter.

- With the animal restrained and the jugular vein occluded with a hand distal to the injection site, a needle should be inserted at a 45°- 60° angle into the jugular. The author chooses to use a 22 g. 1 inch needle in alpacas and a 20 g. 1.5 inch needle in llamas. One option is to place the needle at a downward angle prior to attaching the syringe. When the distended jugular vein is entered, blood will be seen slowly filling the hub of the needle confirming placement in the vein. While the hub is then stabilized with one hand, the syringe is attached, negative pressure applied to confirm that the needle is still within the jugular vein, and medication administered or blood drawn. When the carotid is inadvertently entered, pulsing of blood can be seen from the needle hub indicating that medication should not be administered. In some cases, however, the author has observed that pulsation is not always a consistent finding with accidental carotid entry. A second option is to maintain the needle on the syringe and enter the skin at an upward angle keeping consistent negative pressure on the syringe so that when the jugular is entered blood will immediately be seen filling the syringe.
- The ***Buckeye Blood Draw*** method can be useful when there is only one person to handle the animal and draw blood simultaneously. This method works well with alpacas, and potentially, small llamas. The animal is restrained by placing its neck just behind the animal's ears under the right armpit of the veterinarian with the animal's body directly in front of and parallel to the body of the restrainer with its tail to the restrainer's left. The restrainer should be in a base-wide, comfortable stance with his or her right knee in front of the animal's chest. The right elbow and arm is then pulled back to stretch the animal's neck while the left hand is used to hold off the jugular vein distally. With a needle connected to syringe, the right hand is used to draw blood from the distal 1/3 of jugular vein while the needle is directed at an approximate 45° downward angle. The disadvantage of this method is that, for a right-handed person, it requires blood to be drawn from the left jugular vein. A simple alternative would be to reverse the restraint and place the animal's neck under the restrainer's left armpit to access the right jugular vein. However, this will require the left hand to be used for drawing blood, which may be awkward for the right-handed person until the skill is practiced.



FOLLOW-UP

PATIENT MONITORING

- Patients should be temporarily monitored to ensure no complications arise from the procedure. If accidental carotid injection occurs, immediate seizure activity and/or loss of consciousness may be observed.

POSSIBLE COMPLICATIONS

- Identification of accidental carotid entry and appropriate, immediate, follow up care, is important to reduce the risk of serious complications. In the case of accidental carotid artery entry, even without administration of medication, extra care should be immediately taken to ensure a hematoma does not develop. Direct pressure should be instituted for no less than two minutes, and preferably the site is wrapped for 30 minutes. Unattended and unidentified left-sided hematomas have been observed to cause extraluminal esophageal obstruction and bloat. Right-sided hematomas have been observed to cause extraluminal tracheal compression and subsequent collapse necessitating emergency tracheostomy. However, when accidental carotid entry occurs and is immediately identified and appropriate measures taken, short and long term complications are far less likely.



MISCELLANEOUS

SUGGESTED READING

Anderson D.E., Jones M.L., Miesner M.D. Veterinary Techniques for Llamas and Alpacas. Ames: John Wiley & Sons, 2013:30-32.

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